

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A predistortion control device comprising: (1),
including:
 - a first predistortion control input selectively connected (10) ~~connectable~~ to a power amplifier output ~~(24)~~;
 - a second predistortion control input selectively connected (11) ~~connectable~~ to a signal contact ~~(30,31)~~ of a predistortion device (3); and
 - a predistortion control output selectively connected (12) ~~connectable~~ to a control contact of the predistortion device, the predistortion control device (1) further including:
 - a cross-correlator device (110) connected with
 - a first cross-correlator input ~~(1101,1101I,1101Q)~~ to the first predistortion control input (10) and
 - a second cross-correlator input ~~(1102,1102I,1102Q)~~ to the second predistortion control input (11), ~~which~~ wherein the cross-correlator device (110) further has a cross-correlator output ~~(1112)~~ (1112) at which a cross-correlation signal can be presented, the cross-correlation signal representing a measured cross-correlation (R_m) of signals presented at the first cross-correlator input ~~(1101,1101I,1101Q)~~ and the second cross-correlator input ~~(1102,1102I,1102Q)~~ ;
 - a predistortion function selector device ~~(120)~~, connected with
 - a selector input ~~(1210)~~ to the cross-correlator output (1112), and with
 - a selector output ~~(1211)~~ to the predistortion control output (12), said predistortion function selector device being arranged to compare the measured cross-correlation with a cross-correlation model stored in a memory ~~(122)~~ and determining on the basis of said comparison a suitable predistortion function and presenting a predistortion control signal at said

selector output said predistortion control signal representing said a predistortion function.

2. (Currently Amended) The ~~[[A]]~~ predistortion control device (4) as claimed in claim 1, further including a quantiser device (104) connected with a quantiser input to the first predistortion control input, and with a quantiser output to the first cross-correlator input(~~1101, 1101I, 1101Q~~).

3. (Currently Amended) The ~~[[A]]~~ predistortion control device (4) as claimed in claim 2, wherein the quantiser device (104) is a single-bit quantiser.

4. (Currently Amended) The ~~[[A]]~~ predistortion control device (4) as claimed in claim 2 ~~or 3~~, wherein the quantiser (104) is operable as a sub-sampling device.

5. (Currently Amended) The ~~[[A]]~~ predistortion control device (4) as claimed in claim 2 ~~any one of claims 2-4~~, wherein the cross-correlator device (110) includes a single-bit multiplier (~~111~~).

6. (Currently Amended) The ~~[[A]]~~ predistortion control device (4) as claimed in claim 2 ~~any one of claims 2-5~~, further including a distortion device (102) connected with a distortion input to the first predistortion control input, and connected with a distortion output to the quantiser input.

7. (Currently Amended) The ~~[[A]]~~ predistortion control device (4) as claimed in claim 6, wherein the distortion device includes a random distortion device.

8. (Currently Amended) The ~~[[A]]~~ predistortion control device (4) as claimed in claim 6 ~~or 7~~, wherein the distortion device includes a periodic distortion device.

9. (Currently Amended) The ~~[[A]]~~ predistortion control device (4) as claimed in claim 1 ~~any one of the preceding claims~~, wherein the second predistortion control input (44) is connectable to a signal output of a predistortion device.

10. (Currently Amended) The ~~[[A]]~~ predistortion control device (4) as claimed in claim 1 ~~any one of the preceding claims~~, further including:

an averaging device (412) capable of determining a time averaged cross-correlation value from a memory connected to the cross-correlator output (4112), for storing a number of cross-correlation values, ~~which~~ wherein the averaging device has an averaging output connected to the selector input, for presenting time averaged cross-correlation values to the predistortion function selector device (420).

11. (Currently Amended) ~~An assembly of a~~ The predistortion control device, as claimed in claim 1 ~~(4) as claimed in any one of claims 1-10, and a predistortion device (3) having signal contacts (30,31) further comprising: including~~
a predistortion input (30) for receiving an original signal to be predistorted; ~~and~~
a predistortion output (34) for providing a predistorted output signal based on the original signal, and

a control input contact (32) connected to the predistortion control output (42) at which a predistortion control signal can be provided, in response to which predistortion control signal the predistortion device uses a predistortion function corresponding to the predistortion control signal to generate the predistorted output signal.

12. (Currently Amended) ~~An assembly~~ The predistortion control device as claimed in claim 11, further including a power amplifier (2) connected with:
an amplifier input (20) to the predistortion output (34), and
~~with an amplifier output (24) to the first predistortion control input (400.~~

13. (Canceled)

14. (Currently Amended) A predistortion control method, comprising the steps of: including:

- receiving a power amplifier output signal;
- receiving a predistortion signal from a signal contact of a predistortion device;
- determining a measured cross-correlation value by cross-correlating the power amplifier output signal and the predistortion signal;
- comparing the measured cross-correlation value with a ~~[[an]]~~ cross-correlation model;
- determining a suitable predistortion function from said comparing step ~~a suitable predistortion function~~, and
- providing a predistortion control signal representing said predistortion function.

15. (Previously Presented) The ~~[[A]]~~ predistortion control method, as claimed in claim 14, further comprising:

- minimising a difference between the measured cross-correlation value with a ~~an~~ model cross-correlation value, and
- deriving from said minimizing step the predistortion function.

16. (New) An arrangement for controlling predistortion in a power amplifier, the arrangement comprising:

- a predistortion control device;
- a first predistortion control input selectively connected to a power amplifier output;
- a second predistortion control input selectively connected to a signal contact of a predistortion device; and
- a predistortion control output selectively connected to a control contact of the predistortion device, the predistortion control device further including:
 - a cross-correlator device connected with
 - a first cross-correlator input to the first predistortion control input
 - and

a second cross-correlator input to the second predistortion control input, wherein the cross-correlator device further has a cross-correlator output at which a cross-correlation signal can be presented, the cross-correlation signal representing a measured cross-correlation (R_m) of signals presented at the first cross-correlator input and the second cross-correlator input;

a predistortion function selector device, connected with
a selector input to the cross-correlator output, and with
a selector output to the predistortion control output, said pre-distortion function selector device being arranged to compare the measured cross-correlation with a cross-correlation model stored in a memory and determining on the basis of said comparison a suitable predistortion function and presenting a predistortion control signal at said selector output said predistortion control signal representing said a predistortion function.

17. (New) The arrangement as claimed in claim 16, further including a quantiser device connected with a quantiser input to the first predistortion control input. and with a quantiser output to the first cross-correlator input.

18. (New) The arrangement as claimed in claim 16, wherein the quantiser device is a single-bit quantiser.

19. (New) The arrangement as claimed in claim 17, wherein the quantiser is operable as a sub-sampling device.

20. (New) The arrangement as claimed in claim 17, wherein the cross-correlator device includes a single-bit multiplier.

21. (New) The arrangement as claimed in claim 17, further including a distortion device connected with a distortion input to the first predistortion control input. and connected with a distortion output to the quantiser input.

22. (New) The arrangement as claimed in claim 21, wherein the distortion device includes a random distortion device.

23. (New) The arrangement as claimed in claim 21, wherein the distortion device includes a periodic distortion device.

24. (New) The arrangement as claimed in claim 16, wherein the second predistortion control input is connectable to a signal output of a predistortion device.

25. (New) The arrangement as claimed in claim 16, further including:
an averaging device capable of determining a time averaged cross-correlation value from a memory connected to the cross-correlator output, for storing a number of cross-correlation values, wherein the averaging device has an averaging output connected to the selector input, for presenting time averaged cross-correlation values to the predistortion function selector device.

26. (New) The arrangement as claimed in claim 16, further comprising:
a predistortion input for receiving an original signal to be predistorted;
a predistortion output for providing a predistorted output signal based on the original signal, and
a control input contact connected to the predistortion control output at which a predistortion control signal can be provided, in response to which predistortion control signal the predistortion device uses a predistortion function corresponding to the predistortion control signal to generate the predistorted output signal.

27. (New) The arrangement as claimed in claim 26, wherein the power amplifier is connected with:

an amplifier input to the predistortion output, and

an amplifier output to the first predistortion control input.